

Tennessee Energy Division

Department of Economic & Community Development



2005-2006

ANNUAL REPORT



Energy Division Background

The Energy Division operates as the lead state agency providing and promoting the most efficient and economical use of energy in Tennessee. The state legislature established the Energy Division under TCA 4-3-704 to administer the federal grant programs previously administered by the Tennessee Energy Authority (TEA) and to oversee preparations related to energy emergencies. The legislature also gave the division responsibility for collecting and analyzing data on the availability of various energy resources within the state.

Originally organized as an emergency planning office, the TEA managed the state-wide allocation of motor fuel during the Oil Embargo of 1973. These activities resulted in the development of the State Set Aside Program that continues to be a major responsibility of the division in the event of an energy emergency. In 1983, the state legislature transferred the TEA roles to the Department of Economic & Community Development establishing the Energy Division.

Since its establishment, the Energy Division continues to manage a wide variety of federally funded, energy efficiency-related programs designed to optimize the efficient use of energy. Under ECD, the division provides economic support for small business profitability, lower costs for local governments and energy security by reducing energy inefficiency. The division's successful grant awards come from funding by federal distributions and opportunities under the U.S. Department of Energy, the Petroleum Violation Escrow Fund (PVE), and the US DOE Special Projects Grants, US Environmental Protection Agency and others.

Energy efficiency programs operating during Fiscal Year July 1, 2005 through June 30, 2006

- Small Business Energy Loan Program
- Local Government Energy Loan Program
- Tennessee Energy Education Network
- Industries of the Future
- Grants Management Program
- Energy Emergency Planning
- Public Outreach
- Biodiesel Infrastructure Grant Program
- Main Street Lighting Grant Program
- Clean Cities
- Million Solar Roofs
- Wind Prospecting
- Change A Light

Table of Contents

Small Business Energy Loan Program	1
Local Government Energy Loan Program	4
Tennessee Energy Education Network	6
Industries of the Future	8
Grants Management Program	9
Energy Emergency Planning	10
Public Outreach	11
Biodiesel Infrastructure Grant Program	12
Main Street Lighting Grant Program	13
Clean Cities	14
Million Solar Roof Initiative	15
Wind Prospecting	16
Change A Light	17
Energy Related Business Started/Ceased	18
Appendix:	
Tennessee Energy Statistics	A1
Energy Resource	A2
Petroleum Production, Consumption, Prices	A3
Coal Production, Consumption, Prices	A4
Electricity Production, Consumption, Prices	A5
Natural Gas Production, Consumption, Prices	A6
Glossary of Energy Terms	A7
Units of Measure & Conversion Factors	A8
Long-Range Goals	B1
New Strategies/Plans	C1
Contact Information	19



Small Business Energy Loan Program

The Small Business Energy Loan Program

was developed to help private sector companies increase energy efficiency, upgrade equipment, retrofit buildings and improve operations. The loan program is a revolving loan program available to existing Tennessee small businesses of less than 300 employees or \$3.5 million in annual gross sales or receipts. Eligible and approved applicants can get a low or -0%- interest loan of up to \$300,000 and repay it over a period of up to 7 years.

Applicant businesses located in a designated Three-Star community are eligible for a zero percent interest loan and all others 3%. Loans must be used for energy efficiency-related projects on existing structures that are at least one year old.

Loans may be used to purchase and install one or more of the following energy efficiency measures:

- Insulation, caulking, and weather-stripping
- Storm windows and doors
- Multi-glazed or specially coated windows and doors
- Automatic energy control devices and systems
- Energy efficient heating and air conditioning equipment and system components including heat pumps, furnaces, utility plant and distribution system modifications
- Solar heating and cooling, cogeneration and energy recovery systems
- Energy efficient lighting and lamps
- Other measures that have documentation to show energy savings or reduced energy demand.

Cumulative totals from program inception 1988 through June 30, 2006:

381 applications requesting	\$17,567,099
302 have been approved for	\$12,470,149
and 249 loans have been closed	\$9,605,221

Loans have been made in **60** of Tennessee's **95** counties.

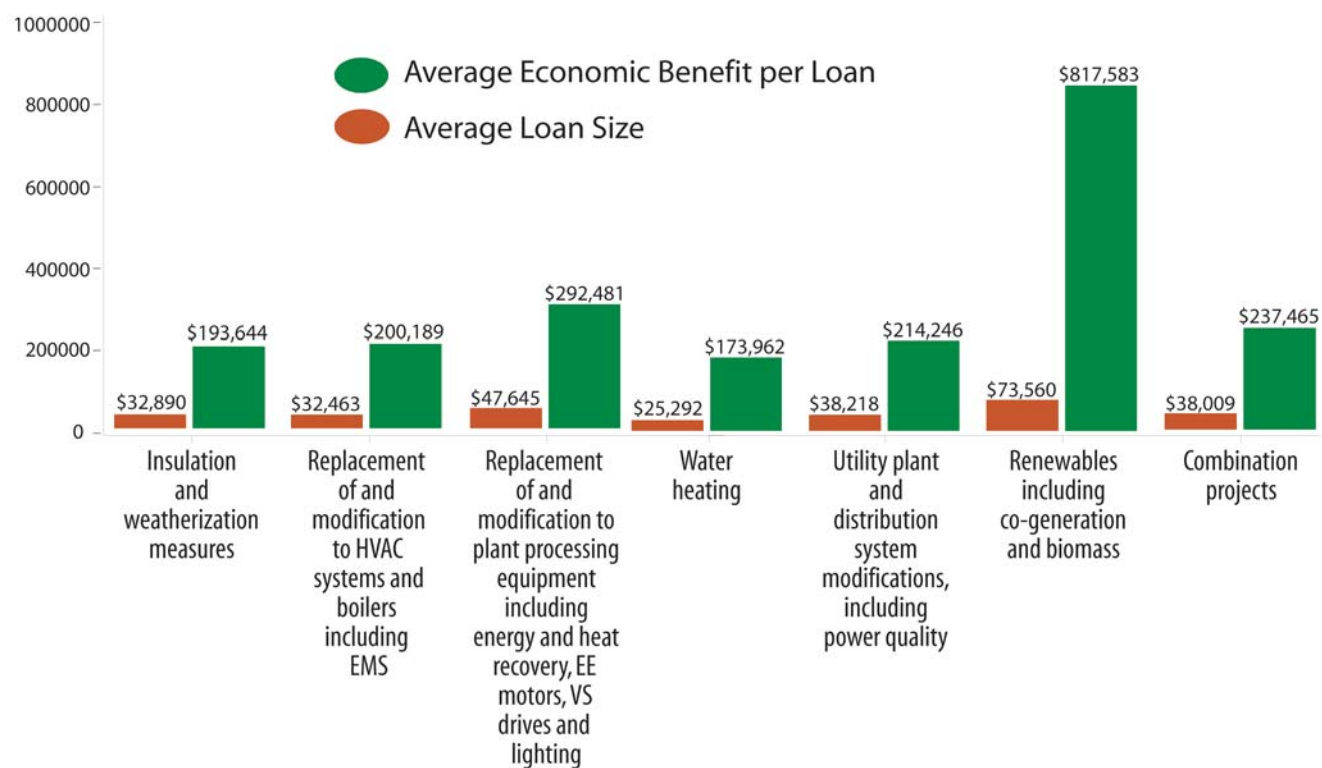
Cumulative energy savings	\$20.3 million
and economic impact	\$98.5 million

These savings, and associated economic impact, translate to approximately **\$2.11** and **\$10.25** per dollar lent, respectively.

\$9,498,496.85



The chart below shows the average economic benefit of various combinations of energy efficiency and conservation measures.



BUSINESS AND INDUSTRY TECHNICAL ASSISTANCE (ENERGY AUDITS)

The program provides Tennessee businesses with **free** technical assistance/ energy audits. Trained energy engineer/ auditors visit each client's facility and identify things that can be done to save energy or reduce energy demand. During the 2005-2006 State Fiscal Year:

- ✓ **93** Small Business Energy Audits were performed
- ✓ Approximately **2,505,814** square feet of building space audited
- ✓ Projects costing approximately **\$2,495,255**
- ✓ Estimated savings - **\$819,928** in energy costs annually

Zero Percent Interest Energy Loans Available

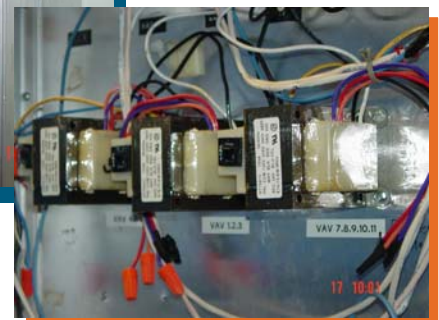
Zero percent interest loans of up to \$300,000 are available for energy efficiency projects. Qualified Tennessee small businesses in Three-Star communities with less than 300 employees can apply for the loans to improve their energy usage and reduce energy costs.

A small family-owned manufacturer of custom kitchen and bath cabinets borrowed \$ 10,814 and saved approximately \$2,000 per year in energy costs.

- AVERAGE LOAN \$38,000
- \$9.4 MILLION IN LOANS
- \$97.9 MILLION IN ECONOMIC BENEFITS

Free Energy Audits

Available to help firms identify areas of energy savings. One untapped use for the loans is replacing old, inefficient production and processing equipment with new, energy efficient state-of-the-art equipment. Loans can also be used for energy efficient lighting, HVAC equipment and motors.





Local Government Energy Loan Program

The Local Government Energy Loan Program was started in late 1991. It is similar to the Small Business Energy Loan Program in that it offers low interest loans to municipal and county governments to improve the energy efficiency of local government-owned buildings such as courthouses, administration, maintenance and emergency response facilities and schools.

The program makes loans for energy efficiency retrofits. Loans are made for up to \$500,000 for each county or city government. These loans are 0% interest for Tennessee Three-Star communities and 3% interest for non Three-Star communities. This program also provides free energy audits to identify needed energy efficiency measures.

Eligible buildings include, but are not limited to:

Courthouses

Jails

Libraries

Fire Halls

City/County Administrative Buildings

K-12 Public Schools

The total outstanding loans as of June 30, 2006:

42 loans

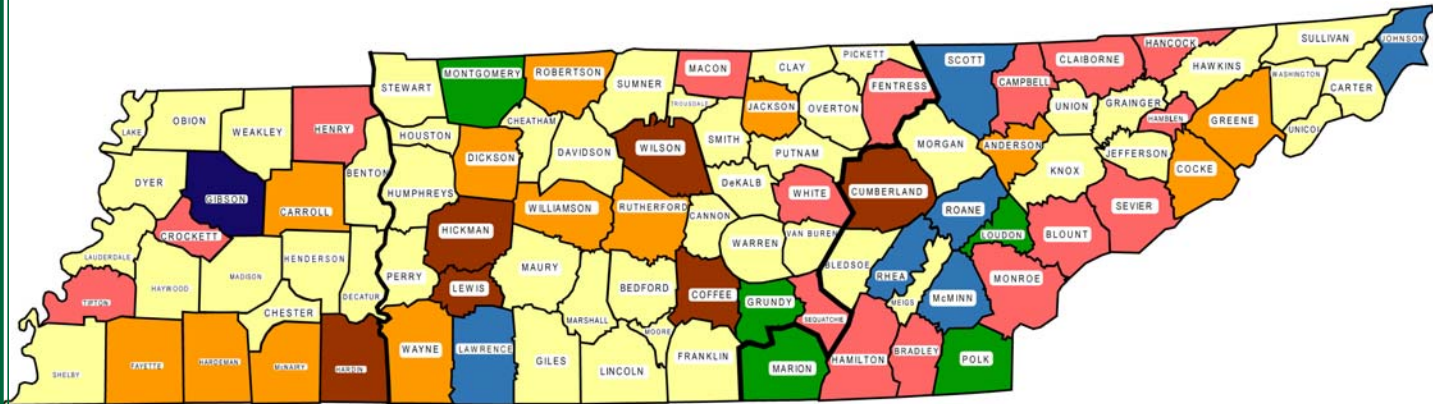
\$5,830,946 loan funds outstanding

The savings per year on all outstanding loans is \$2,013,008. Life of the measures is 15 years, thus total energy savings realized is \$30,195,120.

<u>Energy Audits performed:</u>	29 Local Governments	105 buildings
	12 School Systems	44 buildings
Totals	41 Institutions	149 buildings

Total Sq. Footage Audited	4,071,805
Total Project Cost for identified energy measures	\$5,749,077
Total Energy Savings per Year	\$685,066

Local Government Energy Loan Program (Since inception to June 30, 2006) \$16,208,299.25



\$4,749,573.25

\$5,892,564.00

\$5,566,162.00



Humboldt City Schools receive interest-free loan

ECD's Energy Division, which administers the Local Government Energy Efficiency Loan Program, has announced that Humboldt City Schools has been granted an interest-free loan of \$454,720 to replace the HVAC units at Humboldt High School. The annual energy cost savings for the school will be \$38,313 per year. This measure has a 20-year life, which over this period will realize approximately \$766,260 in energy cost savings. This energy program works in conjunction with the Three-Star program of which Gibson County and the city of Humboldt are members.

Cumberland County applied for and was recently granted a 0% interest loan of \$338,828 to install energy efficient lighting, HVAC retrofits & automatic energy control systems to reduce demand in the Cumberland County Jail and Justice Center. These measures will save Cumberland County an estimated \$460,000 in energy costs over the next 15 years.





Tennessee Energy Education Network

The Tennessee Energy Education Network (TEEN) promotes energy education in grades K-12. Although the classroom is the main focus, the program also works with other community organizations. TEEN services include in-service training workshops for teachers, energy education materials for the classroom, classroom presentations, and a bimonthly newsletter. All services and materials are free to Tennessee teachers.

Two annual observances are "Energy Awareness Month" in October and "National Energy Education Day" (NEED) in March. TEEN is the state coordinator of National Energy Education Day. Students and teachers across the state conduct energy education projects in observance of National Energy Education Day. Projects range from conducting a poster contest to coordinating an Energy Fair/Carnival for the entire school. Students who compile their activities into a project report participate in the NEED Youth Awards for Energy Achievement competition. This competition is open to students in grades K-12, promotes student leadership and encourages students to evaluate and increase their knowledge of energy.

TEEN Teacher/Student Workshops/Presentations July 1, 2005 - June 30, 2006:

	<u>Workshops/Presentations</u>	<u>Participants</u>
Pre-service/In-service Workshops	21	343
Classroom Presentation	159	4,578
Special Presentations	23	1,638

TEEN conducted personal visits to Supervisors of Instruction in 25 counties to make them aware of our program and services. As a result of these visits, we registered eight new teachers to attend our Energy Bus Tour on June 20-23, 2006.

Over 180 students and teachers attended our annual Energy Education Awards luncheon on May 12, 2006. Seven schools received state awards for outstanding participation in the NEED Youth Awards for Energy Achievement competition. Huntingdon Primary School will be recognized for the second year in a row as the National Primary School of the Year. Representatives from the winning schools attended the conference and award ceremony in Washington, DC.

TEEN provided a \$50.00 Award to students with energy related projects in four regional science fairs in the state.

**TEEN Distributed
27,435 materials**

WINNERS!!!

Tennessee
2005
Education Network
Bookmark Design Contest
"Renewable Energy: It's a Natural"

**Chelcee
First**



**Hunter
First**



**Colby
First**

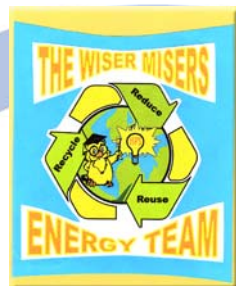


The following schools received a \$1500 Energy Star Grant that was used to purchase Energy Star labeled products for the classrooms.

Huntingdon Primary School
Robert E. Lee Elementary School
Norman Smith Elementary School
Mountain View Elementary School
West Carroll Elementary School



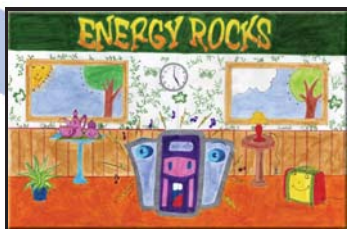
National & State
Primary School of
the Year
Huntingdon
Primary School



2006 NEED Competition Winners

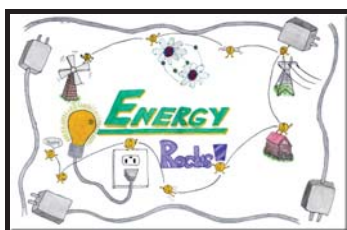


National Elementary
Rookie Finalist &
2nd Place State
Elementary School of
the Year
West Carroll
Elementary School



Kennedy - First Place - 3rd Grade

Tennessee
2005
Education Net
Placemat Design Contest
"Energy Rocks"



Ke (Karen) - First Place - 4th Grade



Macy - First Place - 5th Grade

WINNERS!!!

Industries of the Future

The Tennessee Industries of the Future (IOF) Program follows the National Mission of the US Department of Energy, Office of Industrial Technology.

The program strategy develops partnerships with the core energy-intensive industry sectors (agriculture, aluminum, chemicals, forest products, glass, metal casting, mining, petroleum, and steel) to reduce the energy intensity and materials required for manufacturing. The bottom line results improve energy efficiency, environmental performance, and productivity.

**Save Energy
Now!**

Industrial Technology Program Outreach and Facilitation

Tennessee's Energy Division's participates in national level industrial programs that have provided business support, contributing to job retention through deployment of energy saving industrial technologies.

➤ **BEST PRACTICES
WORKSHOPS HELD
FOR TN INDUSTRIES
INCLUDED 162
ATTENDEES**

**Manufacturers:
Lower Your Energy Bill**

TENNESSEE COMPANIES THAT PARTICIPATED IN THE "SAVE ENERGY NOW"

DUPONT
DENSO
OWENS CORNING
EASTMAN CHEMICAL
AFG
SONOCO
NORANDAL
FR COUNTERMEASURES
BEKAERT WIRE
ALCOA
KTG
FLEETGUARD

Energy Efficiency Outreach for Manufacturing Industries

Contract term for this program runs from October 1, 2005 through September 30, 2007. The goal of the program is to identify energy-intensive manufacturing plants, provide site visits and recommendations on how to improve the energy consumption on site. Particular emphasis is given to identifying opportunities for the introduction of novel energy technologies. Some experimental trials will be offered to participants either on site or at Oak Ridge National Laboratory.



Grants Management Program

Grants Management - The primary objective of this program is to maximize the technology transfer and energy savings potential of the State Energy Program (SEP) grant, Petroleum Violation Escrow (PVE) funds, and other competitive grant funds through program planning, management, and implementation of the program monitoring function. The program monitoring responsibilities include tracking the accomplishment of budgeting goals and milestones against baselines established in the state plan; identifying and analyzing program accomplishments or problems; developing and initiating corrective action; analyzing performance of contractors, subcontractors, and sub grantees in regard to contract provisions; and tracking corrective or follow-up activity.

GRANT PROGRAM APPLICATIONS (FY-7/1/05-6/30/06)

In the past fiscal year, the Energy Division has applied for funding from a variety of sources. In addition to the annual formula funding that supports the State Energy Program (SEP), the division has also applied for competitive awards through DOE Special Projects, the EPA, and Omnibus funding. The categories of funding range from Clean Cities, Industries of the Future (IOF), education, building codes and standards, wind energy resources, and other topics related to energy and energy efficiency. These applications amounted to over \$1.66 million and leveraged funds from alternative sources amounting to \$630,000. Of these totals, the Energy Division has already been awarded over \$1.4 million (leveraging over \$400,000) with one competitive grant application still pending.

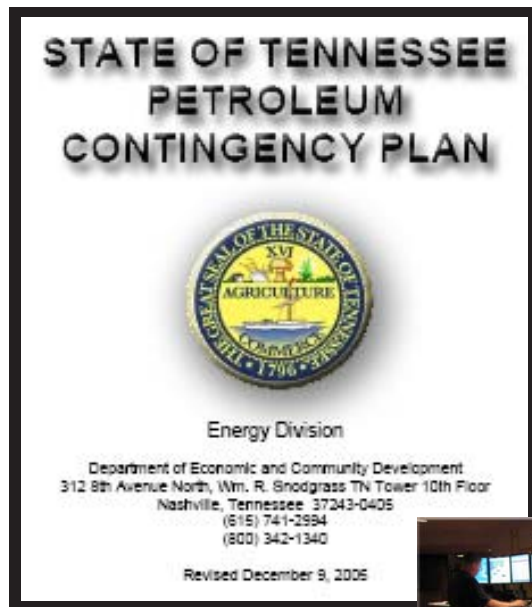




Energy Emergency Planning

Energy Emergency Planning was established by the Energy Division to encompass the activities pertinent to energy emergency preparedness. The Tennessee Emergency Management Agency (TEMA) has established a framework for the development of a comprehensive emergency management plan for the State of Tennessee. The Energy Division's Petroleum Contingency Plan is a part of the ESF-12. The ESF-12 is under the 12 Emergency Support Functions (ESF) implemented under the Federal Response Plan (FRP) for federal assistance in the event of a disaster. Under TEMA's Plan, the Energy Division's role has been to comply with the Emergency Support Function-12/Energy. The Energy Division also maintains access to additional resources and databases that would need to be utilized in the event of an energy-related emergency.

In coordination with Energy Energy Division, the Local Planning Assistance Office Geographic Information System (GIS) had developed a digital cartographic base capable of geographically locating a wide range of information suitable for local planning and management applications. The county tax parcel mapping system was chosen for two reasons. First, each tax map is on the Tennessee State Plane Coordinate System. And second, most features used in planning or management are easily located on the parcel base.



The State of Tennessee has a state base mapping program creating digital tax maps because of the success in the Local Planning GIS program.



Public Outreach

Public Outreach - The public outreach program has made available to small businesses, local governments, and residential energy users a series of measures that can help them to make informed energy decisions. The measures included self-help publications that contain current information on energy data and practical energy conservation techniques and technologies, a toll-free energy hotline and information center for energy information and direction for energy conservation. The Energy Division's website has several links to further inform the public on energy efficiency and conservation measures.

The screenshot displays the Tennessee.gov website. At the top, the header includes the Tennessee state logo, the text "TENNESSEE.GOV", and "The Official Web Site of the State of Tennessee". Below this, it identifies the "Dept. of Economic & Community Development" and "Matthew Kisber, Commissioner". A navigation bar lists various services: ECD HOME, BUSINESS DEVELOPMENT, BUSINESS SERVICES, COMMUNITY DEVELOPMENT, TECHNOLOGY DEVELOPMENT, ADMINISTRATION & POLICY, ENERGY DIVISION, and COMMUNICATIONS & CREATIVE SERVICES. The "ENERGY DIVISION" section is highlighted, featuring a "Public Outreach" link. A sidebar on the left lists topics like Energy Star, Clean Cities, and Infrastructure Grants. The main content area describes the Public Outreach program, which provides information to small businesses, local governments, and residential energy users. It mentions a toll-free hotline (1-800-342-1340) and a video resource. The bottom of the page includes contact information for the Department of Economic & Community Development, located at 312 8th Avenue North, Nashville, TN 37243-0405, with a phone number of 615.741.1888.

The screenshot shows the U.S. Department of Energy's website, titled "A Consumer's Guide to Energy Efficiency and Renewable Energy". The header includes the U.S. Department of Energy logo and the tagline "Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable". The main navigation bar lists sections: Your Home, Your Vehicle, Your Workplace, Products & Services, Renewable Energy, and Information Resources. The "Your Home" section is expanded, showing a list of "Quick Links for Your Home" including Energy Audits, Insulation & Air Sealing, Landscaping, Lighting & Daylighting, Space Heating & Cooling, Water Heating, Pool Heating, Solar Water Heating, Windows, Doors, & Skylights, Heat Pumps, Thermostats, and Wood Heating. There are also links to "Find Products and Services", "Additional Resources", "Disaster Recovery & Building Reconstruction", "Financial Opportunities", "Manufacturers: Lower Your Energy Bill", and "Weatherization Assistance for Low-Income Families". The bottom of the page includes a "Printable Version" link and the text "EERE Home | U.S. Department of Energy".

Biodiesel Infrastructure Grant Program

The program provides grants to each Tennessee county government for the purchase and installation of biodiesel tanks, pumps and card readers to be used for fueling biodiesel vehicles in those communities. Three-Star communities qualify for 75% grants and non Three-Star communities qualify for 50% grants. Under this program the maximum grant to any county is \$12,000.

Applications received	10
Applications approved	8
Approved grant total	\$81,700
Total cost	\$127,700

The above grants were made to 3-Star communities at a 75% grant rate.

City of Alcoa

A biodiesel grant of \$9,000 was recently awarded to the City of Alcoa for the installation of biodiesel fuel pumps.

The city has gone totally from diesel to biodiesel fuel for their 70 city owned diesel vehicles.

They started using B-10 and have advanced to B-40.



Main Street Lighting Program

The program provides matching grants not to exceed \$20,000 for the purchase and installation of exterior lighting retrofits for the original 15 Main Street Programs in Tennessee.

Grant funds can be used for energy efficient:

- ☒ **street lighting**
- ☒ **park lighting**
- ☒ **traffic lighting**

Applications received	3
Applications approved	3
Approved Grant Total	\$60,000
Total cost	\$160,000



A Main Street lighting grant of \$20,000 was recently awarded to the City of Cookeville to replace six wooden-pole Cobra lighting fixtures with 11 decorative pedestrian street lamps on Cedar Street in downtown Cookeville.

The new lighting fixtures will not only save energy but will also enhance the look of Cedar Street.

Clean Cities Program

The Clean Cities Program is sponsored by the U.S. Department of Energy and was created to advance the use of cars and trucks powered by alternative fuels. The program promotes the purchase of alternative fuel vehicles and the expansion of the AFV-refueling infrastructure.

The program coordinators of each coalition meet with city/county local government officials, chamber of commerce officials, public & private fleet directors and fuel suppliers to market the Clean Cities programs and to advance use of alternative fuels. They also visit schools and present programs concerning the use of alternative fuels. They have worked extensively with Tennessee Farmer's CO-OP's, the Tennessee Farm Bureau and the Tennessee Soybean Council to promote alternative fuels.

There are currently 3 Clean Cities programs in Tennessee:



East Tennessee Clean Fuels Coalition (ETCFC) - This coalition has been officially designated as a Clean City by the U.S. Department of Energy. Currently receives a \$20,000 Special Projects Grant from the Department of Energy for Administration.



Clean Cities of Middle Tennessee (CCMT) - This coalition has been officially designated as a Clean City by the U.S. Department of Energy. Currently receives a \$20,000 Special Projects Grant from the Department of Energy for administration.



West Tennessee Clean Cities Coalition (WTCCC) - Granted administrative start-up funds of \$83,500 in October 2005 by ECD's Energy Division.

Million Solar Roofs Initiative

Tennessee Million Solar Roofs (MSR) Initiative is a USDOE-sponsored initiative to promote the utilization of solar energy. Tennessee was accepted as a Million Solar Roofs partner on April 22, 2002 by committing to the eventual installation of 500 solar energy generation systems by the year 2010.



The Tennessee Partnership is composed of many sub-partners including the Tennessee Valley Authority, the Tennessee Electric Cooperative Association, the Tennessee Municipal Electric Power Association, the Governor's Interagency Energy Policy Work Group and the Tennessee Energy Education Network.

Subsequent to being accepted as a partner, the Energy Division entered into an agreement with the Southern Alliance for Clean Energy (SACE) to organize, promote and coordinate the MSR Initiative in Tennessee.

- ☑ A Solar Hot Water system was installed in the 5th Zero Energy House in Lenoir City.
- ☑ Assisted in developing a proposal to produce a report on "Tennessee Economics of Clean Energy," to highlight the positive effects that clean energy businesses have on the state.
- ☑ SACE organized a solar media event on August 25, 2005 that showcased a newly installed 4.5 kW solar PV system.
- ☑ Held the first Zero Energy House Working Group Meeting. Participants included architects, builders, equipment vendors and other professionals.



"We are very lucky here in the Knoxville area to have some of the most exciting solar houses in the entire nation. These new Habitat houses are clear examples of how all homes should be built today," stated Million Solar Roofs Coordinator for the Southern Alliance for Clean Energy.

Wind Prospecting

Wind Prospecting in The Tennessee Valley Region was a 3-year \$180,000 joint Energy Division, Tennessee Valley Authority and Appalachian State University project funded by the US Department of Energy under its 2002 Special Projects cycle. The purpose of the project was to assess the wind generating potential of various high altitude sites in Eastern Tennessee.

During the fiscal year, despite some setbacks involving weather and vandalism, significant progress was made in identifying and monitoring promising wind sites in Eastern Tennessee. Data collected thus far has been analyzed and was compiled into a report. The project was completed late in 2005.

TENNESSEE

Average Power: 186MW

Annual Energy: 2B kWh

Rank in US: 39th

http://www.awea.org/smallwind/tennessee_sw.html



Thirteen sites were selected for monitoring by the Tennessee Valley Authority who worked with the Appalachian State University in erecting towers and evaluating the wind resource at these sites.

The results were presented in Wind Monitoring around the Tennessee Valley Region report, December 2005.

With the exception of the Sand Mountain site, the sites had an average wind velocity of 15 mph or more at 65 meters.

Change Your Light Program

The Energy Division of ECD in conjunction with the Three-Star Program implemented the Change your Light Program to promote energy efficiency and reduce energy consumption, within Three-Star communities. The Three-Star Communities were given an opportunity to apply for a \$1500 grant after successfully completing energy education activities and accumulating 10 points.

The Change Your Light Program involved the use of grant funds to purchase and install national brand Energy Star® light bulb/fixtures or energy efficient T8 fluorescent bulbs/fixtures for their city or county owned schools.





Energy Related Business Started/Ceased

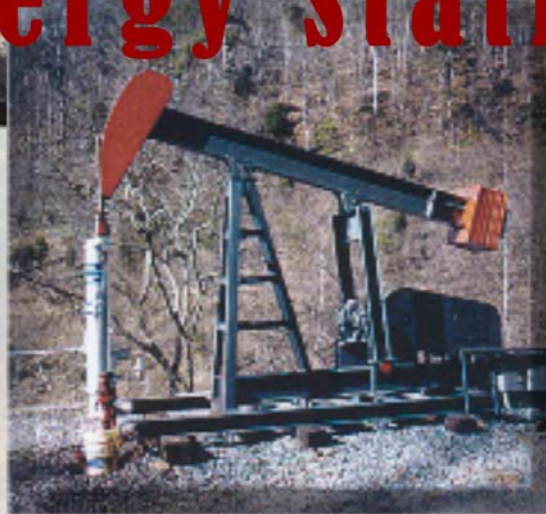
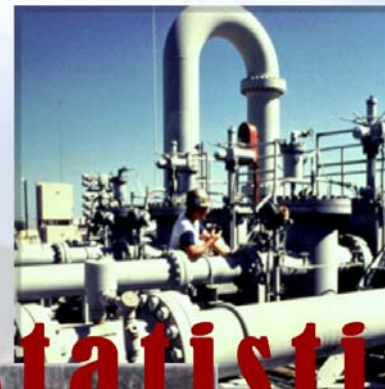
The following chart lists the number of energy related new businesses that started activity during FY 2005-2006, and the number of energy related businesses that ceased operations during FY 2005-2006.

<u>Type of Business/Product</u>	<u>Began/Ceased</u>
Plumbing, heating, air conditioning	40/89
Masonry, other stonework	2/36
Plastering, drywall, insulation	6/15
Millwork	1/3
Converted paper products	0/0
Building paper and building board mills	0/0
Asphalt felts and coatings	0/0
Rubber products	0/0
Flat glass	0/0
Asbestos	0/1
Mineral wool	0/0
Heating equipment - electrical	1/1
Metal doors, sash, and trim	1/0
Fabricated plate work	0/1
Refrigeration and heating equipment	1/2
Electric housewares and fans	0/0
Semiconductors and related devices	0/0
Automatic temperature controls.....	0/0
Process control instruments	0/1
Instruments for measuring electricity	0/1
Construction materials	0/5
Warm air-heating, air conditioning	4/5
Lumber and building materials	9/18
Wholesale Trade - durable goods	2/7
Research and development laboratories	0/0
Management and public relations	0/0
TOTALS.....	67/185

(SOURCE: Tennessee Dept. of Labor and Workforce Development, 2005-06)

Appendix

Tennessee Energy Statistics



The selected information for the following report was obtained from the website at the Energy Information Administration. For more detailed information, you can go to:

<http://www.eia.doe.gov>

ENERGY RESOURCES

TENNESSEE PRIMARY ENERGY RESOURCES	2003 TOTALS	MILLION Btu	% of TOTAL Btu
COAL	2,565,000 short tons	56,204,000	12.6%
CRUDE OIL	359,924 barrels	2,087,559	.5%
NATURAL GAS	1,802,531 Mcf	1,856,607	.4%
NUCLEAR	24,153 MWh	261,069,777	58.5%
HYDROELECTRIC	11,275 MWh	116,572,225	26.1%
OTHER⁽¹⁾	826 MWh	8,540,014	1.9%
TOTAL		446,330,212	100.0%

(1) Other is renewables, and other miscellaneous energy sources

Petroleum Product Prices for Tennessee

(Dollars/Gallon -- Tax Excluded)

	Regular Gasoline	Midgrade Gasoline	Premium Gasoline	Jet Fuel	Kerosene	No 2 Heating Oil	No 2 Diesel	Residual Fuel Oil
2003								
December	.975	1.07	1.151	.907	W	NA	NA	
November	.977	1.075	1.158	.888	W	NA	NA	W
October	1.016	1.115	1.194	.873	W	NA	NA	.672
September	1.124	1.225	1.302	.832	W	NA	NA	.673
August	1.108	1.198	1.280	.874	W	NA	NA	W
July	1.004	1.100	1.185	.839	-	NA	NA	W
June	.969	1.066	1.154	NA	-	NA	NA	.749
May	.951	1.052	1.138	NA	W	NA	NA	W
April	1.052	1.152	1.241	.884	W	NA	NA	W
March	1.160	1.262	1.348	1.084	1.414	NA	NA	W
February	1.135	1.231	1.315	1.072	1.360	NA	NA	W
January	.981	1.077	1.161	.921	W	NA	NA	W
2003 Average	1.037	1.133	1.214	.938	1.316	NA	NA	.783
2002 Average	.863	.955	1.036	NA	NA	NA	NA	NA
2001 Average	.921	1.018	1.076	.753	1.005	NA	NA	.708

http://www.eia.doe.gov/emeu/states/oilprices/oilprices_tn.html

Oil Production by County

Tennessee (BBLs)

Refiner Motor Gasoline Volumes				
Tennessee				
(Thousand Gallons per Day)				
	Regular	Midgrade	Premium	All Grades
2003 Average Total	6,853.0	637.5	1,170.4	8,660.9
2002 Average Total	6,653.0	717.0	1,292.8	8,770.7
2001 Average Total	6,703.8	757.9	1,270.7	8,872.4

http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_marketing_annual/pma_historical.html

	2001	2002	2003
Overton	160,412	94,915	102,331
Scott	48,683	56,084	58,855
Morgan	45,147	53,754	55,040
Pickett	39,091	32,314	40,241
Fentress	31,920	21,721	30,014
Hancock	26,281	20,027	26,841
Campbell	15,736	18,763	24,284
Claiborne	15,691	13,398	14,547
Anderson	1,896	3,802	6,528
Clay	1,076	1,032	745
Cumberland	414	424	375
Rhea	81		123

(Tennessee Division of Geology, Monthly, Purchaser's Reports (Form R-MP-2))

Average Coal Price Delivered Tennessee

(Dollars per Short Ton)

	Electric Utility Plants	Other Industrial Plants
2003	28.15	39.10
2002	27.73	40.17
2001	28.31	38.18

<http://www.eia.doe.gov/cneaf/coal/page/acr/acr.pdf>

Coal Consumption Tennessee

(Thousand Short Tons)

	Electric Power	Other Industrial Plants*	Residential & Commercial Sectors
Year 2003	23,189	3,354	134
Year 2002	24,630	3,340	64
Year 2001	24,487	3,575	140

<http://tonto.eia.doe.gov/FTP00T/coal/qcrhistory.htm>

*Other Industrial Plant: Industrial users, not including coke plants, engaged in the mechanical or chemical transformation of materials or substances into new products (manufacturing); and companies engaged in the agriculture, mining, or construction industries.

Coal Production Tennessee

2003 County	Underground		Surface	
	Number of Mines	Production	Number of Mines	Production
Anderson	1	36	2	75
Campbell	3	174	3	368
Claiborne	4	313	6	1,230
Cumberland	0	0	1	219
Fentress	0	0	1	15
Scott	2	135	0	0

<http://www.eia.doe.gov/cneaf/coal/page/acr/acr.pdf>

**Net Generation of Electricity by
Primary Energy Source
Year to Date
(Thousand Megawatthours)**

	Year 2001	Year 2002	Year 2003
Coal	59,730	59,706	54,932
Petroleum	400	270	325
Natural Gas	456	470	417
Nuclear	28,576	27,574	24,153
Hydroelectric	6,213	7,278	11,275
Other Renewable¹	829	802	821
Other²	0	3	5
All Sectors	96,222	96,114	91,930

1) Other renewables include wood, black liquor, other wood waste, municipal solid waste, landfill gas, sludge waste tires, agriculture byproducts, other biomass, geothermal, solar thermal, photovoltaic energy, and wind.

2) Other energy sources include batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, and miscellaneous technologies.

http://www.eia.doe.gov/cneal/electricity/epm/matrix96_2000.html

**Retail Sales of Electricity
to Ultimate Consumers
by Sector
Year to Date
(Million Kilwatthours)**

	Residential	Commerical	Industrial	Other ¹	All Sectors
Year 2001	37,316	26,318	32,356	1,092	97,082
Year 2002	38,752	26,523	31,845	1,113	98,233
Year 2003	38,071	26,316	32,619	1,045	98,052

1) Public street and highway lighting, other sales to public authorities, sales to railroads, and interdepartmental sales.

http://www.eia.doe.gov/cneal/electricity/epm/matrix96_2000.html

**Average Retail Price of Electricity
to Ultimate Consumers
by Sector
Year to Date
(Cents per Kilwatthours)**

	Residential	Commerical	Industrial	Other ¹	All Sectors
Year 2001	6.32	6.31	4.12	8.83	5.62
Year 2002	6.41	6.45	4.15	8.92	5.72
Year 2003	6.55	6.57	4.29	9.87	5.84

1) Public street and highway lighting, other sales to public authorities, sales to railroads, and interdepartmental sales.

http://www.eia.doe.gov/cneal/electricity/epm/matrix96_2000.html

Natural Gas Consumption Tennessee (Million Cubic Feet)

	Residential	Commercial	Industrial
Year 2003	70,851	57,238	112,099
Year 2002	69,330	53,710	118,241
Year 2001	68,053	53,010	118,566

http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_gas_annual/nga.html

Average Price for Natural Gas Tennessee (Dollars per Thousand Cubic Feet)

	Residential	Commercial	Industrial
Year 2003	9.64	8.88	6.32
Year 2002	8.15	7.37	5.34
Year 2001	10.16	9.40	6.85

http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_gas_annual/nga.html

Natural Gas Production by County Tennessee (MCF)

2001		2002		2003	
Hancock	979,470	Hancock	765,429	Hancock	461,953
Claiborne	351,583	Claiborne	354,221	Claiborne	322,070
Morgan	280,191	Morgan	278,031	Morgan	290,250
Scott	245,831	Campbell	267,242	Campbell	272,501
Anderson	79,251	Scott	256,939	Scott	215,137
Fentress	46,422	Anderson	80,133	Anderson	199,966
Campbell	20,064	Fentress	49,238	Fentress	40,654

(Tennessee Division of Geology, Monthly, Purchaser's Reports (Form R-MP-2))

GLOSSARY

Barrel: A liquid measure of oil, usually crude, equal to 42 U.S. gallons or 280-380 pounds depending upon API Gravity and equal to 35 British Imperial gallons.

Bituminous Coal: A coal that is high in carbonaceous matter having a volatility greater than anthracite and a calorific value greater than lignite. In the United States, it is often referred to as soft coal. It is used primarily for electricity generation, coke production, and space heating.

British Thermal Units (Btu): The quantity of heat necessary to raise the temperature of one pound of water one degree Fahrenheit.

Coke: A porous, solid residue resulting from the incomplete combustion of coal heated in a closed chamber, or oven, with a limited supply of air. Coke is largely carbon and is a desirable fuel in certain metallurgical industries.

Cubic Foot: The most common unit of measurement of gas volume of one cubic foot under stated conditions of temperature, pressures, and water vapor.

Energy: The capacity for doing work. Electric energy is measured in watthours (wh) and heat energy is generally measured in British thermal units (Btu). One form of energy may be changed to another such as burning coal to produce steam to drive a turbine which produces electricity.

Energy Flow: The series of steps involved in supplying fuels for use, including exploration, mining, transformation, distribution, and consumption.

Kilowatt- hour: The amount of energy equal to one kilowatt in one hour; equivalent to 3,412 Btu.

Liquefied Petroleum Gas: A gas containing certain specific hydrocarbons that are gaseous under normal atmosphere conditions, but can be liquefied under moderate pressure at normal temperatures.

Prime Mover: The engine, turbine, water wheel or similar machine which drives an electric generator.

Pumped-Storage: A hydroelectric plant which generates electricity during peak load periods usually by using water previously pumped into a storage reservoir during off-peak periods.

Ton/Short Ton: A unit of weight equal to 2,000 pounds.

Turbine: A fluid acceleration machine for generating rotary mechanical power from the energy in a stream of fluid.

CONVERSION FACTORS

Bituminous Coal	
Production	21.912 Million Btu/short ton
Consumption	21.467 Million Btu/short ton
Butane	103,000 Btu/gallon
Crude Oil	
Production	5.800 Million Btu/barrel
Imports	5.903 Million Btu/barrel
Diesel Fuel	138,690 Btu/gallon
Electricity	
Fossil fuel steam-electric power plant generation*	10,339 Btu/kilowatt-hour
Nuclear power plant generation	10,809 Btu/kilowatt-hour
Electricity consumption	3,412 Btu/kilowatt-hour
Kerosene	135,000 Btu/gallon
Lubricants	144,404 Btu/gallon
LPG	86,666 Btu/gallon
Motor Gasoline	125,071 Btu/gallon
Natural Gas	
Production	1,030 Btu/cubic foot
Consumption	1,030 Btu/cubic foot
Propane	91,333 Btu/gallon
Residual fuel oil	149,690 Btu/gallon

Units of Measure

Coal

1 metric ton	contains	1,000 kilograms or 2,204.62 pounds
1 long ton	contains	2,240 pounds
1 short ton	contains	2,000 pounds

Crude Oil (Average Gravity)

1 barrel	contains	42 gallons
1 barrel	contains	0.136 metric tons (0.150 short tons)
1 metric ton	contains	7.33 barrels
1 short ton	contains	6.65 barrels

* This thermal conversion factor is used for hydroelectric power generation and for wood and waste, wind, photovoltaic, and solar thermal energy consumed at electric utilities.

Long-Range Goals

The primary long-range goal of the Energy Division is to reduce Tennessee's energy intensity below the national average through deployment of energy efficient technologies and energy best practices Tennessee's energy users. The goals, objectives, strategies and accomplishments are listed in the following.

- GOAL 1:** Provide energy efficiency-related information, financial and technical assistance to all sectors of Tennessee's business, commercial and industrial economies by implementing and managing programs that promote the optimum use of energy as both a resource and an asset.
- GOAL 2:** Promote energy education in all Tennessee schools in order to instill an understanding of energy issues among Tennessee students and future citizens.
- GOAL 3:** Administer a wide variety of energy efficiency and renewable energy programs and initiatives funded by the US Department of Energy and the Environmental Protection Agency and compete for additional funding whenever such open solicitations are made available.

Strategies and Plans for the Future

Energy Star Program - Energy Star is a voluntary program sponsored by the U.S. Department of Energy (DOE) and the Environmental Protection Agency (EPA). This federal partnership strives to increase consumer awareness and desire for energy efficient products. The EPA also provides unbiased technical information, support services, public relations assistance, and access to a broad range of resources and tools. The State Energy Division became an Energy Star Partner in 2003. Future plans include a grant available to schools in Three-Star communities to promote the purchase of energy efficient products in their schools. In addition, the department is encouraging other state agencies to purchase Energy Star products when available.

Three-Star Energy Education Program- The Three-Star Energy Education Program will make available to Three-Star Communities a \$500 grant to conduct several energy education initiatives in community schools. Points will be awarded for each activity/project undertaken and completed. A maximum of 10 points is required to be eligible to participate in the Three-Star Energy Star Program.

Three-Star Energy Star Program- The Three-Star Communities will be given an opportunity to apply for a \$1,500.00 grant after successfully completing the TEEN Energy Education activities and accumulating 10 points. The Three-Star Energy Star program involves the use of grant funds to purchase Energy Star labeled/approved products for only the K-12 city or county owned school(s) that completed the TEEN Educational activities and accumulated the required 10 points. (Grants will be reimbursements only and request for payments must include all original invoices for the items purchased for either program).

Small Business Energy Loan Program - During SFY 06-07, rule changes to the SBELP that were initiated in 05-06 will go into effect. These changes will improve program operation, allow more types of projects to be funded and open up wider access to the program. In addition, activities will be initiated during the fiscal year to update the program operating guidelines to reflect recent rule changes and other programmatic changes. Continued effort will be directed to getting word about the program out to the Tennessee business community. A continued emphasis will be placed on the competitive advantages of energy efficiency and the effect it has on worker comfort, production efficiency and throughput cost, job satisfaction and retention and the environment.



Energy Division

**Tennessee Department of
Economic & Community Development
Wm. R. Snodgrass TN Tower, 10th Floor
312 Eighth Avenue North
Nashville, TN 37243-0405**

1-800-342-1340

<http://www.state.tn.us/ecd/energy.htm>